



COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

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AD HOC ADVISORY COMMITTEE MEETING SUMMARY **Triennial Review WQS** **December 1, 2006**

Welcome and Introductions

Advisory Committee Members and Alternates Present:

Chesapeake Bay Foundation: Mike Gerel

City of Richmond: Robert Steidel and Ed Cronin

Dominion Power: Ken Roller

Department of Navy: Dave Cotnoir

U.S. Fish and Wildlife Service: Cindy Kane

VA Association of Municipal Wastewater Agencies (VAMWA): Jim Pletl

Virginia Coal Association: Tommy Hudson

VA Department of Health (VDH): Michele Monti (Epidemiology), Khizar Wasti (Toxicology),
Bob Croonenberghs (Shellfish Sanitation)

VA Manufacturers Association: Tom Botkins and Charlie Bridges

DEQ Staff Present:

Alan Pollock (Facilitator), Jean Gregory, Elleanore Daub, Alex Barron, David Whitehurst,
Charles Martin, Jutta Schneider, Harry Augustine, Don Smith, Allan Brockenbrough

Other Participants:

Rick Parrish, Southern Environmental Law Center

Lisa Ochsenhirt (City of Richmond)

Overview and Discussion of Triennial Review Potential Amendments

The triennial review timeline was reviewed. There are no longer the executive order deadlines between the Notice of Intent Comment period and the Notice of Public Comment and Hearing to get the proposed and final regulation back to the Department of Planning and Budget (180 and 150 days respectively). However, DEQ as a policy intends to continue to meet those deadlines. For triennial review, this means we will ask the Board in June 2007 for approval to go to public hearing with a proposed regulation. We intend to have a final regulation by mid-2008. A summary of the comments was presented. They are itemized as follows:

- Focus on inaccuracies or inflexible aspects

- Use best, current scientific information and make sure EPA guidance appropriate for VA
- Improve in light of new EPA assessment guidance 303(d)
- Triennial Review takes too long
- Much concern about the lowering of uses, move cautiously
- Use designations made in the 1970's without scientific foundation and in need of revision or refinement along with related criteria
- Define the level of evidence needed in reasonable grounds petitions to justify the need for a UAA
- Eliminate allocated impact zones to prevent lethality to resident aquatic life
- Prohibit new or expanded mixing zones for Persistent Bioaccumulative Toxics
- Require a parameter by parameter approach for antidegradation protection.
- Strengthen implementation of Tier 2 as some degradation has occurred in Tier 2 waters without the required analysis of social or economic necessity.
- Include a Tier 2.5 designation between tier 2 and 3.
- Encourage placement of high quality wetlands as tier 3
- TDS not appropriate – focus on individual constituents
- TDS concentration of 334 mg/L overly protective and much lower than other states and what technical literature or recent studies shows as toxic levels
- TDS naturally variable in concentration and composition dependent on soils, rocks, hydrology
- Support for TDS criterion, extend to turbidity
- Update all WQC that lead to pollutant reductions particularly for PCBs, mercury and emerging pollutants
- Clarify in the regulation that either SAV or water clarity may be used to determine use attainment (don't need both to do an assessment).
- Given the recent financial, technical burden placed upon WWTF due to the Bay commitments for nutrient reductions focus on streamlining or minimizing additional regulatory burdens where consistent with good science

All aspects of the regulation will be open for comment. These include antidegradation, use designations, mixing zones, bacteria, swamp waters, numerical criteria, Chesapeake Bay standards, special standards, trout waters and public water supply. These are the main issues that staff used to focus the ad hoc committee's efforts.

Items to Focus on For Future Meetings

The group was asked to review a suggested schedule for items to focus on for future meetings. The plan is to introduce and discuss a topic with the advisory committee at one meeting and the staff would come back to the following meeting with suggested amendments to the regulation related to that topic for further discussion. Today's meeting has no amendments but bacteria and 10% assessment rules will be discussed with amendments for both issues presented in February 2007 (NOTE: the agenda items for all ad hoc meetings listed in the schedule was not clear that the 10% assessment rule amendments would be presented next meeting and has been updated to reflect that point). Criteria (toxics, including mercury and total dissolved solids) are planned for discussion in February with amendments presented in March. Mixing zones, antidegradation, special standards and swamp waters are planned for discussion in March with amendments presented in April. The final meeting will review all of the amendments.

Discussion:

The February meeting might interfere with the General Assembly session. (NOTE: DEQ staff has checked with the DEQ policy office and was told that the session should be at a point where it will not interfere with participation in the ad hoc meeting process.)

Conventional Pollutants Assessment Rules (10% Rule)

The 10.5% rule is not a regulation but an assessment method that has been in use since the late 1990's. All conventional pollutants (dissolved oxygen in non-bay waters, bacteria, temperature (non-estuarine), pH, nutrients, have instantaneous values and the water quality standards are written so that no excursions of those values are allowed. Guidance was written such that waters fully supporting uses can have up to 10.5% exceedences of water quality standards without negatively affecting designated uses. Specifically, an allowable excursion rate of 10.5% in data sets with > than 10 samples or in a smaller data set (2 -9 samples) ≥ 2 excursions means an impairment. For example, 2 excursions in 20 samples is not impaired (10%), 3 exceedences in 20 samples is impaired (10.5%).

DEQ justifies the '10.5% rule' because designated uses are not permanently affected (impaired) by periodic exceedences of instantaneous criteria, it allows for inadvertent analytical or instrument error and for "natural" fluctuations in conventional parameter concentrations. This rule has been used in the past and in 1997 & 2000 also included in EPA's 305b guidance. In 2002, EPA sent a letter to DEQ acknowledging > 10.5% is considered impaired in VA.

However, when EPA approved a 303d assessment that was based on methods approved by the Florida legislature (with no public input as the water quality standards regulation requires), EPA was sued (July 2005) and subsequently the 2006 EPA Integrated Report guidance drops support of the 10.5% Rule and EPA says the states assessment must be consistent with Water Quality Standards. EPA Region 3 comments on the draft 2006 DEQ assessment guidance states that the 10.5% rule is not consistent with the VA Water Quality Standards and with the new EPA Integrated Report guidance.

EPA agreed to let DEQ use the 10.5 % rule for 2006 assessment provided the rule is included in triennial review and incorporated into the Water Quality Standards prior to the 2008 Integrated Report. This 10.5% rule may not be limited to instantaneous values but may be appropriate for other durations also (e.g. bacteria geometric mean).

Discussion:

A question was raised whether DEQ resamples when a small dataset has only one excursion. Staff explained we could not do this with rotation monitoring or probabilistic monitoring which is one sample only. Generally, DEQ tries to get 12 samples in our ambient monitoring program. A discussion ensued about the large amount of data available from owners/operators that are not used routinely by DEQ and that the assessment guidance is not clear how outside data is used and there is a perception that outside data is not encouraged. Staff responded that outside data is encouraged and this year dischargers have been invited to submit data.

10.5% was chosen instead of 10% because earlier EPA guidance indicated an allowable 10% excursion and 11% was impaired. It was not clear what to do with percentages between 10 and 11. DEQ decided upon 10.5% as the cut off below which waters are not impaired.

Once the rule is in the water quality standards, all programs, including TMDLs, would use it. This is similar to other allowable excursion frequencies, like the Bay reference cumulative frequency distribution (a certain allowable exceedence of the criteria). TMDLs are designed to meet the criteria given the allowable exceedences over space and time. There is no additive effect (10% allowance for assessment and 10% allowance for TMDLs equals 20% exceedence). It was noted that TMDLs are conservative in that they contain a margin of safety.

Another idea was to reconsider the binomial method. Staff indicated that identification of statistical errors (type I, II) was required before delisting, which required a certain amount of data and the binomial was too complicated. Another idea was to include a statement in the regulation that recognizes that these values are not instantaneous and that there is an allowable excursion. Instead of instantaneous criteria, consider (as with toxics criteria) the duration of the test from which the criteria was derived. Also, consider a procedure that takes into account the magnitude of the excursion above (or below) the criteria.

A sample that exceeds a criterion only tells the water quality at that moment. It is not known what may have occurred 24 hours before that or after that or if the designated use is met or not. Staff noted that the current assessment procedures have led to over 1,000 impaired waters listings. There is much work to be done and this tool would allow us to put resources where impairment clearly exists. The TMDL program, with its more intense sampling, often finds the waters listed with this procedure are impaired (both via the numerical criteria and the designated use) so the process is working.

The 10.5% rule may be appropriate for bacteria, but not so with the other conventional pollutants. (NOTE: DEQ agreed to show some data to the group so they can see how the rule affects impairment decisions with the conventional pollutants at various sites).

Bacteria Amendments

Staff provided a short history of the bacteria criteria and reviewed the existing regulations. EPA has promulgated the 1986 criteria in all states not in compliance with the Beach Act. The preamble to this Beach Act Rule (2004) and FAQ sheets published in 2006 constitute the existing EPA guidance for bacteria. The FAQ sheets answer questions about the use of the single sample maximum and geometric mean and the allowable risk levels in freshwater. The EPA guidance states that the geometric mean is the more environmentally relevant endpoint, single sample maximums must be used for making daily decisions in beach monitoring, notification and closure and states may decide how to use single sample max in other CWA applications (e.g., 303(d) listing).

EPA also gives the states some discretion on the duration of the geometric mean (e.g. 30-day or seasonal). The VA water quality standards currently identify the geometric mean as a calendar monthly average to match the monthly design of the monitoring program (program not designed to calculate a geometric mean if 2 sample happen to fall within 30 days of one another).

In the Beach Act Rule EPA adopted the full suite of 1986 criteria, including the four confidence intervals statistically related to the geometric mean. These confidence intervals are to represent different levels of primary contact use and are tools to help states make beach advisories or closings. They are not acute criteria and do not require a use attainability analysis to use one confidence interval over another.

EPA also describes in the rule, the range of risk (or illness rates) allowed for freshwater. These range from 8/1000 swimmers to 10/1000 swimmers allowed acute gastrointestinal illness. Changing illness rates does not require a use attainability analysis and all illness rates are protective. The existing body of data does not allow extrapolation of a criterion in freshwater beyond 10/1000 illnesses. Marine waters currently assume a risk of 19/1000 illnesses.

EPA believes the scientific understanding of the health risks associated with animal waste is incomplete; therefore, the Beach Act Rule states that the bacteria criteria apply regardless of human or animal origin.

Staff would like the group to discuss the EPA guidance allowances for possible inclusion in the VA water quality standards in order to clarify how these criteria are used in all water programs. Currently, monitoring, assessments and TMDLs are using the existing criteria as follows:

Program	Frequency of Data Collection	Criteria Used to Assess Use
Beaches (VDH)	Weekly	VDH uses SSM for closures/advisories (no allowable non-attainment but resample) DEQ uses G.M. for 303(d) impairment listing (2-hits = impaired, beach and/or advisory and closure information)
Inland Waters (DEQ)	Variable 1/mo. Or bimonthly	SSM > 10.5% = impairment listing 2-hits = impairment in small datasets (2-9 samples)
TMDL (DEQ)	Model generated daily values	SSM and G.M. = 0% impairment (100% attainment)

DEQ would also like the group to provide input on clarifying that the recreation bacteria criteria also apply in shellfish waters, whether retaining the fecal criteria for recreation protection is necessary and to discuss wet weather or combined sewer overflow (CSO) impacted waters and the needs for criteria modifications in those waters.

Discussion:

After implementation of the TMDL if a stream is still impaired due to wildlife, this water body would be a candidate for a secondary contact designation. Not all wildlife is naturally occurring, as they tend to congregate and over-populate in and around manufactured ponds when there is little habitat left in the surrounding area. Does DEQ consider that in TMDL implementation? DEQ responded that indeed, those situations are controlled in the TMDL and the Department of Game and Inland Fisheries is involved in deriving options for the TMDL.

EPA was quoted as saying that water quality standards start with getting the designated use right. For example, a small stream in a national forest is necessary to support the wildlife and should be correctly designated for fishing and wildlife, and not swimming.

No TMDLs have been completely due to wildlife and there is always some human input that needs to be controlled.

TMDLS requires 100% attainment and permits require 100% compliance but nonpoint sources do not have the tools to require compliance.

The water quality standards should be kept simple and a separate regulation or guidance should address the assessment issues. However, EPA requires this to be part of the standard or else this assessment tool cannot be used.

Richmond CSO Water Quality Standards Coordination

The City of Richmond provided input related to the CSO issue. The city is at the point in their Long-Term Control Plan to coordinate with water quality standards. The LTCP must meet water quality

standards. The 'knee of the curve' analysis shows the most effective end of the CSO program with most of the river meeting standards at this level (alternative E). Beyond that level, costs are prohibitive with little increase in water quality.

Single sample maximums are percentiles of a distribution around the geometric mean and EPA states that single sample maximums could impart a level of protection much more stringent than intended by the 1986 bacteria criteria document. Employing these single sample maximums as 'not to be exceeded' values, essentially shifts the geometric mean lower to overly stringent levels. Two tables of monthly means (model generated from head of tide in Richmond to a 20 miles downstream) show most of the violations occur in the summer and correspond to illness rates up to 10/illnesses per 1000 swimmers. EPA recommends an illness rate less than 10 illnesses per 1000 swimmers and the cost effective treatment alternative E show that this illness rate can be met. Moving to the highest cost alternative (separation at > \$2,000 million) leads only to .1 days more meeting water quality). EPA recognizes the single sample maximum is to be used for beach monitoring, the geometric mean is the environmentally relevant endpoint and the allowable risk level is 10%. DEQ must address all these points so that water quality standards may be met under the recommended alternative E and meet their Long-Term Control Plan commitments.

Discussion: (NOTE: While much of the discussion pertained only to the CSO needs, the group was also considering some of these options from a statewide perspective).

Note the CSO area under investigation and the data shown is for the tidal James River and does not include the park systems (like Belle Isle) in the city. These areas will meet the water quality standards (when background loads are also reduced). The City is undertaking a notification plan for swimmers in these areas when wet weather may cause an overflow.

The issues at hand are the illness rate and the use of only the geometric mean as the criteria in these areas. The TMDL is currently written to meet both the single sample maximum and the geometric mean. There is concern over changing the illness rate and whether the change would apply statewide or just in the CSO impacted waters.

The illness rate at the heavily used tidal water beaches is 19 illnesses per 1000 swimmers and cannot be lowered to match the lower freshwater illness rate as that takes the geometric mean essentially to zero which can't be met. The public wants an illness rate of zero; however if this is translated to an increase in the sewer bill the answer would be different. There are no known evidence of illnesses at this higher risk level; however, these types of illnesses are not tracked and not generally reportable. Waterborne outbreaks are reportable, as are single cases of the diseases Giardiasis, Cryptosporidiosis, and others, but the causes or sources of these illnesses are not limited to water. The causes of single cases of illness may not be known or confirmed at the time of reporting; this information on single cases is rarely captured.

Background loads must also be reduced to meet the criteria. Most of the days not meeting criteria are due to background loads (estimated 62 days). It is unknown exactly how much background load must be reduced to meet .8% illness rate. The tables shown in the presentation with illness rates are without any background reductions. It seems essential to get the TMDL results to make predictions about the background reductions. With the background reductions, a lower illness rate (e.g. 9%) might be doable.

Adjusting the single sample maximums to a different level of primary contact use (a higher confidence interval) or adjusting the standard deviation will not solve the whole problem as the City must still meet the geometric mean of 126 (with 8% illness rate). The illness rate and whether to use the single sample maximum must be addressed and could apply only to the CSO impacted waters. (NOTE: The City has employed the use of the site-specific standard deviation for a single sample maximum of 334).

The shellfish program does employ the 90th percentile as a 'maximum' value to protect under high flow events and this does push the geometric mean down. For the shellfish program, lowering the geometric mean is considered a good environmental decision during high flow to protect water quality (human health).

A variable illness rate could also be useful for TMDLs if costs are prohibitive or impossible with 100% reduction (including wildlife).

Alternative E cost will increase the existing sewer bill 44%. The City has invested \$250 million so far.

Closing Discussions on Recreation Bacteria

DEQ would like to see the fixed rate excursion (e.g. 10.5% rule) formalized in the water quality standards for bacteria and the conventional pollutants.

Discussion

The analytical or instrument error is not a valid scientific reason for allowing a fixed excursion rate. This should not be used as a reason to justify this option in the water quality standards.

A scientific reason for employing the 10.5% rules is that there are no instream impacts at <10% violations. The numerical criteria are surrogates for actual observations of the ecosystem and all streams can withstand some level of exceedence without adverse impacts. The toxics criteria were designed this way (one excursion every 3 years on the average is allowed). There is also a certain amount of uncertainty associated with chemical data and a tremendous amount of conservatism used in the derivation of criteria.

If the bacteria single sample max is based on the 75th percentile, why would we use the 10.5% rule if meeting the geometric mean in a primary contact water would allow a 25% exceedence of the single sample maximum? Using the geometric mean to assess a waterbody would allow a 25% exceedence of the 235 max and still be protective of primary contact. (NOTE: This could be the assumption in a large data set where we could be sure the geometric mean was accurate and the bacteria population distributed around the mean exactly as published. We are trying to work within the existing framework where decisions about water quality need to be made from a small data set and grab samples.)

It seems the best science is to use the geometric mean (with a seasonal average) and not even bring the 10.5% rule into play. If seasonality is an option, we must decide upon the seasons and how we treat the non-swimming season. Seems like using more data to calculate a mean would be preferable.

One option would be to look at data of seasonal means to see if it is more or less protective. Having a summer vs. non-summer mean doesn't make sense. Beach protection is based on short-term daily

water quality; therefore, not sure what a seasonal mean would mean from a public health perspective. (NOTE: DEQ agreed to look at seasonal means and monthly means for beach and inland waters and sharing this with the Health Department to assist in the decision process.)

Beach and inland waters data geometric means should be evaluated; however, there will be > values in the data set that will affect the mean.

The City of Richmond data shows the seasonal means would also be exceeded.

There was consensus from the group that the regulation should be clear that the recreation criteria apply in all waters (including shellfish waters) and that the fecal coliform criteria for recreation protection should be deleted from the regulation.

Shellfish

DEQ described the need to include a disinfection policy for shellfish waters that would allow the VA Department of Health (Division of Shellfish Sanitation) to issue protective condemnation zones.

Discussion:

The concern in shellfish waters is that viruses may continue to thrive even with a chlorine disinfected discharge. The Division of Shellfish Sanitation was using a new procedure to delineate condemnation zones that is irrespective of the permit limit for fecal coliform. DEQ should be able to maintain the existing disinfection policy for the recreation based criteria in shellfish waters (NOTE: The Division has checked with the Food and Drug Administration (FDA) and the FDA recommends that fecal coliform limits remain as part of NPDES limit conditions for waste water treatment facilities that can impact shellfish waters.)

Introduction to New Toxics Aquatic Life Water Quality Criteria

New aquatic life criteria include cadmium, tributyltin and silver. EPA has published a new human health methodology that must be considered for all human health values. There are also a number of non-priority pollutants that could be considered for criteria. The fish tissue mercury criterion will also be considered. (NOTE: In the presentations, mercury was incorrectly placed with the list of non-priority pollutants and has been moved to a different slide. Other ideas are to simplify the duration and return frequency of toxics criteria and whether the criteria apply below the default design low flows.)

Discussion:

There is information available about copper and ammonia on freshwater mussels which could affect those criteria. We should also discuss with EPA the use of passive 30-day samplers to approximate the chronic criteria for water quality assessments. DEQ agreed to pursue these two items.

Staff agreed to distribute a summary of the meeting in 2 weeks to the group.

Handouts distributed at the December meeting:

Triennial Review Ad Hoc Committee as of December 1, 2006
Agenda, Ad Hoc Committee, Triennial Review, December 1, 2006
Agenda Items for Triennial Review Ad Hoc Meetings (December 2006 – May 2007)
Copies of Slides from Presentations

Triennial Review (Overview)

VA Water Quality Assessment Methodology (10% Rule Overview)

Bacteria Background

Water Quality Standards Coordination (City of Richmond CSO)

EPA Revised Toxics Aquatic Life Criteria (Toxics Introduction)